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UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

6004196

December 21, 1999

**Polishing pad refurbisher for in situ, real-time  
conditioning and cleaning of a polishing pad used in  
chemical-mechanical polishing of microelectronic substrates**

REISSUE: December 19, 2001 - Reissue Application filed Ex. Gp.: 3725; Re. S.N.  
10/054,692 August 6, 2002

CERT-CORRECTION: May 15, 2001, a Certificate of Correction was issued for this  
patent

APPL-NO: 032230 (00)

FILED-DATE: February 27, 1998

GRANTED-DATE: December 21, 1999

ENGLISH-ABST:

A pad refurbisher that provides in situ, real-time conditioning and/or cleaning of a polishing surface on a polishing pad used in chemical- mechanical polishing of a semiconductor wafer and other microelectronic substrates. The pad refurbisher has a body adapted for attachment to a wafer carrier of a chemical-mechanical polishing machine, and a refurbishing element connected to the body. The body has a distal face positioned proximate to a perimeter portion of the wafer carrier and facing generally toward the polishing surface of the polishing pad. The body travels with the wafer carrier as the wafer carrier moves over the polishing pad. The refurbishing element is connected to the distal face of the body so that the refurbishing element can operatively engage the polishing surface substantially adjacent to the perimeter of the wafer carrier. The refurbishing element is a pad conditioning device and/or a pad cleaning device that conditions and/or cleans the polishing surface of the pad to remove waste particles from the polishing surface of the polishing pad and place the pad in a desired polishing condition. In operation, the refurbishing element travels with the wafer carrier and is selectively engaged with the polishing surface while the wafer carrier presses the wafer against the polishing surface to selectively condition and/or clean generally only the deteriorated areas on the pad.

(C) QUESTEL 1994  
QUESTEL.ORBIT (TM) 1998

Selected file: PLUSPAT

**\*\* SS 1: Results 1**

1 / 1 PLUSPAT - @QUESTEL-ORBIT  
PN - US6004196 A 19991221 [US6004196]  
TI - (A) Polishing pad refurbisher for in situ, real-time conditioning  
and cleaning of a polishing pad used in chemical-mechanical  
polishing of microelectronic substrates  
PA - (A) MICRON TECHNOLOGY INC (US)  
IN - (A) DOAN TRUNG T (US); SANDHU GURTEJ S (US)  
AP - US3223098 19980227 [1998US-0032230]  
PR - US3223098 19980227 [1998US-0032230]  
IC - (A) B24B-007/08  
EC - B24B-037/04I  
B24B-053/007  
B24D-007/18  
PCL - ORIGINAL (O) : 451443000; CROSS-REFERENCE (X) : 451287000  
451290000 451444000  
DT - Basic  
CT - US5584751; US5595527; US5664987; US5775983; US5782675; US5785585;  
US5823854; US5851138; US5885137; US5885147  
STG - (A) United States patent  
  
AB - A pad refurbisher that provides in situ, real-time conditioning  
and/or cleaning of a polishing surface on a polishing pad used in  
chemical-mechanical polishing of a semiconductor wafer and other  
microelectronic substrates. The pad refurbisher has a body adapted  
for attachment to a wafer carrier of a chemical-mechanical  
polishing machine, and a refurbishing element connected to the  
body. The body has a distal face positioned proximate to a  
perimeter portion of the wafer carrier and facing generally toward  
the polishing surface of the polishing pad. The body travels with  
the wafer carrier as the wafer carrier moves over the polishing  
pad. The refurbishing element is connected to the distal face of  
the body so that the refurbishing element can operatively engage  
the polishing surface substantially adjacent to the perimeter of  
the wafer carrier. The refurbishing element is a pad conditioning  
device and/or a pad cleaning device that conditions and/or cleans  
the polishing surface of the pad to remove waste particles from  
the polishing surface of the polishing pad and place the pad in a  
desired polishing condition. In operation, the refurbishing  
element travels with the wafer carrier and is selectively engaged  
with the polishing surface while the wafer carrier presses the  
wafer against the polishing surface to selectively condition  
and/or clean generally only the deteriorated areas on the pad.

1 / 1 LGST - @LEGSTAT  
PN - US 6004196 [US6004196]  
AP - US 32230/98 19980227 [1998US-0032230]  
DT - US-P  
ACT - 19980227 US/AE-A  
APPLICATION DATA (PATENT)  
US 32230/98 19980227 [1998US-0032230]  
  
19991221 US/A  
PATENT  
  
20010515 US/CC

CERTIFICATE OF CORRECTION

20020806 US/RF  
REISSUE APPLICATION FILED  
20011219  
UP - 2002-35

1 / 1 CRXX - ©CLAIMS/RRX  
PN - 6,004,196 A 19991221 [US6004196]  
PA - Micron Technology Inc  
ACT - 20011219 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 20020806  
REISSUE REQUEST NUMBER: 10/054692  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3725

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1 / 2 PAST - ©Thomson Derwent  
AN - 200232-001622  
PN - 6004196 A [US6004196]  
OG - 2002-08-06  
ACT - REISSUE APPLICATION FILED

2 / 2 PAST - ©Thomson Derwent  
AN - 200120-000138  
PN - 6004196 A [US6004196]  
OG - 2001-05-15  
ACT - CERTIFICATE OF CORRECTION

Selected file: INPADO

**\*\* SS 1: Results 1**

1 / 1 INPADO - ©INPADO  
PN - US 6004196 A 19991221 [US6004196]  
TI - POLISHING PAD REFURBISHER FOR IN SITU, REAL-TIME CONDITIONING AND  
CLEANING OF A POLISHING PAD USED IN CHEMICAL-MECHANICAL POLISHING  
OF MICROELECTRONIC SUBSTRATES  
IN - DOAN TRUNG T [US]; SANDHU GURTEJ S [US]  
PA - MICRON TECHNOLOGY INC [US]  
AP - US 32230/98-A 19980227 [1998US-0032230]  
PR - US 32230/98-A 19980227 [1998US-0032230]  
IC - B24B-007/08

1 / 1 LEGALI - ©LEGSTAT  
PN - US 6004196 [US6004196]  
AP - US 32230/98 19980227 [1998US-0032230]  
DT - US-P  
ACTE - 19980227 US/AE-A  
APPLICATION DATA (PATENT)  
US 32230/98 19980227 [1998US-0032230]  
  
19991221 US/A  
PATENT

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